Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

932
2Ag8

(ACE-88)

COMPARATIVE SUMMARY OF RESULTS WITH CRUDE AND CLEANED GUM IN DISTILLATION WORK AT THE NAVAL STORES STATION, OLUSTEE, FLA.

LIBRAR
RECEIVED
★ MAY 29 1941 ★
U. S. Department of Agricultur

By

G. P. Shingler, Senior Chemist
Bureau of Agricultural Chemistry and Engineering
U. S. Department of Agriculture

During the year 1934 the Naval Stores Station distilled the total yield of gum from seven crops of 90 percent-longleaf pine gum and ten crops of 90 percent-slash pine gum. Seventy-five percent of the essentially longleaf gum was second- and third-year raised, and the remainder fourth- and fifth-year unraised. Forty percent of the essentially slash gum was virgin and 60 percent second-year raised. Paddles were used in all but the first chipping. Clay cups with galvanized iron gutters and aprons were used throughout.

The "longleaf" gum consisted of 135 charges, of which 67 were distilled in the fire still in the manner used at the Naval Stores Station, 36 in the fire still with sparger, and 32 in the steam still. Of the 174 charges of "slash" gum, 168 were distilled in the fire still, and 6 in the steam still. The temperature of the rosin at the time of turning out was in all cases 315° F., and 1½ layers of batting were used in straining the rosin from each charge. An exact record on each charge was kept. These data were compiled for the report entitled, "Summary of 1934 Distillation Work," by F. P. Veitch and G. P. Shingler, and show the results obtained on both "longleaf" and "slash" gum for the three periods into which the season was divided.

So far as is known, this was the first complete, accurate summary of a year's work at a turpentine still ever made available to naval stores producers in this country.

In order to complete the data for the commercial type of distillations, the Naval Stores Station at Olustee, Florida, ran comparative charges in 1936 on the fire still with crude gum and on the steam still with gum which had been cleaned, washed and settled by the method developed at the Station. A comparative summary of results from distillations of this crude and cleaned gum is now offered for publication in order to furnish a basis for evaluation of results obtained upon crude gum run on the fire still as checks against results on the steam still with filtered, washed and settled gum.

In 1936 the Naval Stores Station ran 23 charges, or 87,194 pounds, of "longleaf" gum and 16 charges, or 63,001 pounds of "slash" gum on the fire still; it ran 41 charges, or 144,722 pounds, of filtered, washed and settled "longleaf" gum and 61 charges, or 230,159 pounds, of filtered, washed and settled "slash" gum on the steam still. The fire still, from 87,194 pounds net of "longleaf" and 63,001 pounds net of "slash" gum, produced, respectively, 140,072 pounds net of "longleaf" gum turpentine and 10,955 pounds net of "slash" gum turpentine, along with 60,375 pounds net of "longleaf" gum rosin and 44,296 pounds net of "slash" gum rosin. The steam still, from 144,722 pounds net of "longleaf" and 230,159 pounds net of "slash" gum, produced, respectively, 25,134 pounds net of "longleaf" gum turpentine and 41,648 pounds net of "slash" gum turpentine, along with 104,646 pounds net of "longleaf" gum rosin and 163,136 pounds net of "slash" gum rosin.

Because of possible confusion from using the number of barrels or drums to indicate yields of products (both metal drums and wooden barrels were used for rosin), it is thought best to express all results in percentage yields of turpentine and rosin and to show the distribution of grades of rosin in the same manner. The basic weights are stated in the foregoing paragraph and the following tabulation shows the percentages computed from these weights.

Comparative Results of Distillations Run on the Fire Still with Crude Gum and on the Steam Still with Filtered, Washed and Settled Gum in 1936

	Crude Gum (Fire Still)		Cleaned Gum (Steam Still)	
	Longleaf	Slash	Longleaf	Slash
No. Chgs.	23	16	41	61
Turp. yield %	16.1	17.4	17.4	18.1
Rosin yield %	69.2	70.3	72.3	70.9
Rosin Grades Obtained:				
X	0	0	0	25.3
WW	4.6	21.1	10.1	64.8
WG	13.9	26.7	24.9	6.5
N	13.4	17.7	40.6	0
M	8.6	0	22.0	0
K	29.5	5.8	2.4	3.3
I	21.9	28.7	0	0
H	9.0	0	0	0

The fire-still and steam-still charges were run on gum from areas comparable to those where gum had been obtained in 1934. The ages of the workings were: for "longleaf" virgin, third- and fourth-year raised, and third-, fourth- and sixth-year unraised; and, for slash-second-year raised.

It can be seen from the tabulation that the predominant rosin grade from "longleaf" gum was raised from 29.5% "K" rosin, with crude gum in the fire still, to 40.6% "N" rosin with cleaned gum in the steam still, and that from "slash" gum was raised from 28.7% "I" rosin, with crude gum in the fire still, to 64.8% "WW" rosin, with cleaned gum in the steam still. It is also noticeable that the lowest grades were made with "longleaf" gum and the highest grades with "slash" gum. The differences in rosin and turpentine yields from "longleaf" and "slash" gums were due at least in part, to the greater scrape content of the "longleaf." Gums of both species showed an increase in yields of turpentine and rosin as the result of cleaning.

April, 1941